Massachusetts Department of Environmental Protection
Source Water Assessment and Protection (SWAP) Report
For
Hancock Elementary School

What is SWAP?

The Source Water Assessment and Protection (SWAP) program, established under the federal Safe Drinking Water Act, requires every state to:

- Inventory land uses within the recharge areas of all public water supply sources;
- Assess the susceptibility of drinking water sources to contamination from these land uses; and
- Publicize the results to provide support for improved protection.

SWAP and Water Quality

Susceptibility of a drinking water source does *not* imply poor water quality. Actual water quality is best reflected by the results of regular water tests.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Prepared by the Massachusetts Department of Environmental Protection, Bureau of Resource Protection, Drinking Water Program

Date Prepared:
December 23, 2003

Table 1: Public Water System (PWS) Information

PWS NAME	Hancock Elementary School
PWS Address	Route 43
City/Town	Hancock, Massachusetts
PWS ID Number	1121009
Local Contact	Ms. Jane Roberts
Phone Number	(413) 458-8224

Well Name	*Source ID#*	*Zone I (in feet)*	*IWPA*	*Source Susceptibility*
Well #1	1121009-01G	100	422	High

Introduction

We are all concerned about the quality of the water we drink. Drinking water sources may be threatened by many potential sources of contamination, including septic systems, road salting, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

Purpose of this report:
This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential sources of contamination, the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

This report includes:
1. Description of the Water System
2. Discussion of Land Uses in the Protection Areas
3. Protection Recommendations
4. Attachments, including a Map of the Protection Areas

1. Description of the Water System

Hancock Elementary School is a small, rural school with a total student and staff population of approximately 75 people per day, located on Route 43 in Hancock, Massachusetts. Hancock is a small rural residential, recreational community situated between the Berkshire Hills and the Taconic Range on the New York border in Berkshire County. The Town of Hancock does not have municipal water or sewer; therefore, the school is operates a single public water supply well and disposes a wastewater through an on-site septic system. The school uses fuel oil and has a single

What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by the water supplier and limited to water supply activities.
- **The Zone II** The primary recharge area defined by a hydrogeologic study.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

What is Susceptibility?

Susceptibility is a measure of a well's potential to become contaminated due to land uses and activities within the Zone I and Interim Wellhead Protection Area (IWPA).

underground storage tank adjacent to the school and there are three boiler rooms at the facility. Route 43 has infiltration storm drains and a swale along the edge of the road; the swale drains to the Rathburn Brook and eventually to Kinderhook Creek. The school operates a single 8-inch diameter, 137 feet deep bedrock well that was installed in 1970 and has approximately 50 feet of casing. The estimated yield of the well is approximately 5.5 gpm, however the school utilizes less than 1,000 gallons per day.

The Zone I is the protective area immediately surrounding the source and is assumed to contribute recharge to the source. The Zone I for individual wells is a circle centered on the well with a radius ranging from 100 to 400 feet based on the approved withdrawal rate from the well. An Interim Wellhead Protection Area (IWPA) is a primary recharge area designated for a groundwater source when the Zone II has not yet been delineated. The actual recharge area for a well may be significantly larger or smaller than the IWPA. The Zone I and IWPA protective radii for Well #1 are 100 feet and 422 feet respectively based on the maximum, daily water use reported at the school from metered data.

Geologic mapping and field observations indicate the school is located within the narrow Kinderhook Creek valley. The swamp just north of the school appears to be the headwaters of the Kinderhook Creek, which flows south along the east boundary of the schoolyard. The Kinderhook Creek valley is a narrow, relatively shallow buried, bedrock valley that was filled with stratified drift (sand and gravel) deposits. The stratified drift was deposited during the recession of the glaciers approximately 18,000 years ago; recent streams later reworked the sand and gravel and deposited additional alluvium in the valley. The bedrock is a complex series of folds and faults with rock mapped various metamorphic rock types mapped of the Vermont Stockbridge Valley Authocthon and Taconic Allocthon. The bedrock in valley, in the immediate vicinity of the well is mapped as the calcite marble of the Stockbridge Formation. There is no evidence of a continuous confining, clay layer in the immediate vicinity of the well. Wells located in these conditions are considered aquifers with a high vulnerability to contamination due to the absence of hydrogeologic barriers that can prevent contaminant migration. Please refer to the attached map of the Zone I and IWPA.

The DEP requires public water suppliers to monitor the quality of the water. For current information on monitoring results and treatment, please contact the Public Water System contact person listed above in Table 1 for a copy of the most recent Consumer Confidence Report. Drinking water monitoring reporting data is also available at http://www.epa.gov/enviro/html/sdwis/sdwis_query.html, the website for EPA's Envirofacts.

Table 2: Table of Activities within the Water Supply Protection Areas

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
Conforming Zone I	-	-	-	Contact DEP prior to conducting any work in Zone I or expanding the system.
Underground storage tank	No	Yes	High	Leaks, spills, or improper handling. Floor drains in the boiler room were sealed and fuel lines were sleeved.
Transportation corridors, parking and stormwater/infiltration	No	Yes	Moderate	Control the use of deicers and coordinate with emergency response personnel.
School	No	Yes	Moderate	Use BMPs for school facilities
Agriculture	No	No	--	Rotation of row crops just outside of the IWPA
Residential	No	Yes	Moderate	One lot partially in IWPA

*** -For more information on Contaminants of Concern associated with individual facility types and land uses please see the SWAP Draft Land Use / Associated Contaminants Matrix on DEP's website - www.state.ma.us/dep/brp/dws/.**

Glossary

Aquifer: An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

Hydrogeologic Barrier: An underground layer of impermeable material that resists penetration by water.

Recharge Area: The surface area that contributes water to a well.

Additional Documents:

To help with source protection efforts, more information is available by request or online at www.state.ma.us/dep/brp/dws, including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix

2. Discussion of Land Uses in the Protection Areas

There are some land uses and activities within the drinking water supply protection areas that are potential sources of contamination. Although the agricultural activities are outside of the Zone I and IWPA, because the IWPA is not a scientifically determine recharge area, the DEP often identifies activities that are near source.

Key issues include:

1. **Zone I;**
2. **School and residential;**
3. **Underground fuel storage**
4. **Transportation corridor/parking.**

The overall ranking of susceptibility to contamination for the system is high, based on the presence of at least one high threat land use or activity in the IWPA of the well, as seen in Table 2.

1. Conforming Zone I – Well #1 has a conforming Zone I with respect to ownership and activities within the Zone I. There is a play structure partially within the Zone I of Well #1. The DEP allows some passive recreation and other non-threatening activities within the Zone I. However, the water supplier does need permission to conduct any additional activities in the Zone I.

Recommendations:

✓ Continue to work toward prohibiting/limiting activities in close proximity to the well and using BMPs to protect the water supplies.

2. School and residential – The school facilities and part of a residence are within the IWPA for the well. Elementary schools generally use only household hazardous materials and the recommendations for small schools are similar to those for residents. There are state and federal controls on some activities and products used at schools to promote "healthy schools". All of the school's facilities are located within the IWPA of the well. Potential exists for contamination of the well by onsite use of cleaning materials, petroleum from lawn equipment, fertilizers, and pesticides. Storm drains in the parking areas at the school drain directly into the ground. If managed improperly, activities associated with residences and the school can contribute to drinking water contamination. Common potential sources of contamination include:

- **Household Hazardous Materials** - Hazardous materials may include automotive wastes, paints, solvents, pesticides, fertilizers, and other substances. Improper use, storage, and disposal of chemical products used in homes are potential sources of contamination.
- **Heating Oil Storage** - If managed improperly, Underground and Aboveground Storage Tanks (USTs and ASTs) and their associated fuel lines can be potential sources of contamination due to leaks or spills of the fuel oil they store.
- **Stormwater** – Catch basins transport stormwater from roadways and adjacent properties to the ground and streams. As flowing stormwater travels, it picks up debris and contaminants from streets and lawns. Common potential contaminants include lawn chemicals, pet waste, and contaminants from automotive leaks, maintenance, washing, or accidents. Visit the Nonpoint Source pollution web site for additional information at http://www.state.ma.us/dep/brp/wm/nonpoint.htm.

School and Residential Use Recommendations:

V Educate residents on best management practices (BMPs) for protecting water supplies. Distribute the fact sheet "Residents Protect Drinking Water" available in Appendix A and online at the MA DEP website - www.mass.gov/dep/brp/dws/protect.htm, which provides BMPs for common residential issues.

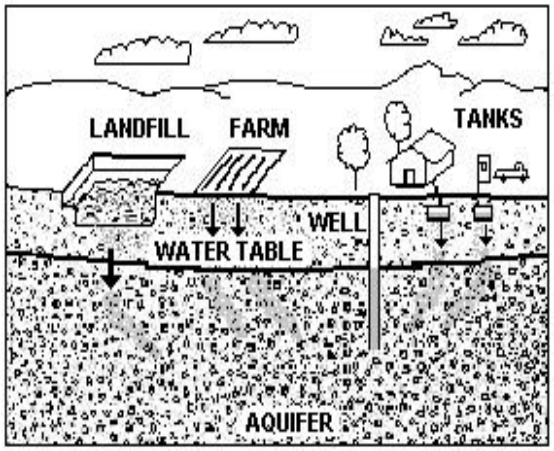

Figure 1: Example of how a well could become contaminated by different land uses and activities.

For More Information:

Contact Catherine Skiba in DEP's Springfield Office at (413) 755-2119 for more information and for assistance in improving current protection measures.

More information relating to drinking water and source protection is available on the Drinking Water Program web site at: www.state.ma.us/dep/brp/dws/

Copies of this assessment have been made available to the public water supplier and town boards.

- Continue the use and maintenance of BMPs for activities within close proximity to the well.
- Continue to prohibit the use pesticides or fertilizers within the Zone I of the well. Consider the use of Integrated Pest Management to minimize the use of pesticides and nutrients in fertilizers.
- Continue the use of Best Management Practices for all activities at the school and at the athletic fields across the street. Consider drought resistant grasses and/or low release nutrient fertilizers in the IWPA, as required.
- Use secondary containment as necessary for any petroleum products kept for maintenance and lawn care equipment.
- Review your emergency response plan regarding accidental releases within the area. Ensuring that emergency responders in town are aware of the locations of your resource areas.
- Refer to the Massachusetts Public Health Associations Healthy Schools website at the following website http://www.mphaweb.org/pol_schools.html for additional information
- Prepare a policy and a plan for maintenance operations, especially when oil filters are changed. We recommend that you require your boiler maintenance contractor use containment, have absorbent materials on hand to prevent accidental leaks while conducting routine maintenance. The contractor should also be responsible for the off-site disposal of any boiler blow down generated during maintenance.

3. Underground Storage Tanks (UST) – There is one UST at the facility within the IWPA of Well #1. The school had all of the fuel lines sleeved and investigating options for maintenance to the UST leak detection and monitoring system.

Recommendations:

- USTs in close proximity to the water supply should be closely monitored for signs of leaking or failure and during deliveries. Review stormwater flow direction and anticipate control of a potential spill during delivery. Replace and upgrade tanks as appropriate.
- Evaluate and consider the use of alternative fuel, as is feasible.
- Any upgrades and modification to fuel storage facilities must meet current construction standards and be done consistent with Massachusetts's plumbing, building, and fire code requirements for storage tanks. Consult with the local fire department or your consultant for any additional local code requirements regarding USTs .
- Review construction details for the tanks to ensure that they include overfill protection.
- Ensure that a spill response plan is included in the emergency response plans and ensure spill containment equipment is available. Include plans of storm drain systems in the emergency response plan.

4. Transportation corridor and parking – The parking areas for the school and a portion of Route 43 are within the IWPA of the well. Accidents and normal use and maintenance of roads pose a potential threat to water quality. Catch basins transport stormwater from roadways and adjacent properties to the ground, streams, rivers or reservoir. As flowing stormwater travels, it picks up de-icing materials, petroleum chemicals and other debris on roads and contaminants from streets and lawns. Common potential contaminants in stormwater originate from automotive leaks, automobile maintenance and car washing, accidental spills as well as waste from wildlife and pets.

Recommendations:

- Prepare an Emergency Response Plan that includes coordination between the emergency responders to be sure they area aware of the location of your well.

3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will reduce the sources' susceptibility to contamination. The Hancock School is commended for past development of a source away from most activities and work conducted to sleeve fuel oil lines and sealing of floor drains. The DEP encourages continued diligence in monitoring activities within and near protection areas. The water supplier should review and adopt the key recommendations above. Consider contacting the agricultural property land owner just to make them aware of your water supply and to encourage the use of a USDA Natural Resources Conservation Service (NRCS) farm plan to protect water supplies. Call the local office of the NRCS in Pittsfield at 413-443-6867 ext. 3 for assistance or review the fact sheet available online at http://www.nrcs.usda.gov/programs/farmbill/2002/pdf/EQIPFct.pdf .

Funding:

The Department's Wellhead Protection Grant Program provides funds to assist public water suppliers in addressing Wellhead protection through local projects. Protection recommendations discussed in this document may be eligible for funding under the "Wellhead Protection Grant Program". For additional information, please refer to the program fact sheet. If funding is available, each program year the Department posts a new Request for Response for the Grant program (RFR). Other funding opportunities are described in "Grant and Loan Programs: Opportunities for Watershed Protection, Planning and Implementation" at: http://www.state.ma.us/dep/brp/mf/files/glprgm.pdf.

These recommendations are only part of your ongoing local drinking water source protection. Citizens and community officials should use this SWAP report to encourage discussion of local drinking water protection measures.

4. Attachments

- Map of the Public Water Supply (PWS) Protection Areas
- Source protection fact sheets